

مؤسسة الإمارات للطاقة النووية
Emirates Nuclear Energy Corporation



شركة براكة الأولى ش.م.م.
Barakah One Company PJSC



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Chemical engineer Aysha Al Ahabbi stands in front of a model of one of the Barakah nuclear reactors under development in the United Arab Emirates.
Source: Emirates Nuclear Energy Corporation



The United Arab Emirates is on the cusp of becoming the first Arab nation to generate power from nuclear energy. Over the past 10 years, it has established a highly-trained workforce to support a domestic nuclear energy sector—including chemical engineers, explains Aysha Al Ahbabi, who is working at the UAE’s Barakah Nuclear Energy Plant, now nearing completion.

AN EMERGING LEADER

Aysha Al Ahbabi

Why employ chemical engineers?

Because reactors are assets that can last for 60 years or more, when properly operated and maintained by experts, including chemical engineers. That includes careful attention to the ‘reactor chemistry’ a delicate balance of chemicals in the millions of gallons of water used to transfer heat produced in the core to the rest of the plant where it is turned into electricity. Through reactor chemistry, impurities are filtered out of the water, and corrosion is suppressed.

There are other places in the UAE for a chemical engineer to work, including the country’s five oil refineries. Al Ahbabi says she studied about them at United Arab Emirates University on the way to becoming a chemical engineer, but she prefers the Barakah Nuclear Energy Plant, currently under development by the Emirates Nuclear Energy Corporation (ENEC).

“Because nuclear is safe, clean and reliable, it is the future energy for the UAE,” she explained.

Her training has taken her to South Korea, to see Shin Kori 3, the ‘reference plant’, or design model, for Barakah. She’s also traveled to Florida, in the United States, to attend a seminar on water chemistry run by the Electric Power Research Institute.

Nuclear is “a new field for me, and a new area for the Emirates,” she said. “As an Emirati growing up with an open mind, I wanted to take on new challenges, and I wanted to work in this new sector.”

Electricity demand is high and growing rapidly in the UAE, she said, and it is “crucial for our country to meet this demand through clean and sustainable energy sources.”

In all, four reactors at Barakah are under development, and construction of the first unit was completed in 2018. They will eventually provide up to a quarter of the country’s electricity, with almost zero carbon dioxide emissions or other pollutants.

She is the first in her family to pursue an education in a technical field. Her family has been highly supportive. When she spent six weeks in South Korea in training, her father flew there for the day to visit, she said.

Her brother, six years old, misses her sometimes, because Barakah is four hours by car from her home, so she spends four nights a week there. “I told him that I am like one of the plant’s doctors, and I am helping to take care of the health of the plant. Being in the chemistry department, I take a sample, and then I give ‘medicine,’ to prevent ‘disease,’ which is corrosion,” she said. “That’s the easiest way to explain it.”

Al Ahbabi’s studies in nuclear energy were facilitated by the Energy Pioneers program. Launched in 2009 by ENEC, the program facilitates the training of young skilled UAE National professionals who will operate the Barakah plant and form the country’s next generation of nuclear energy leaders. Al Ahbabi’s training includes leadership skills, and she now helps train others to work at the plant.

The plant will likely provide lifetime employment, but her ambition does not end with water chemistry. “I am constantly working on my skills. I aspire to be a plant manager, and ultimately, a CEO.”